Department of Energy

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FEB 27 2007

PPPO-02-272-07

Mr. R. Bruce Scott, Director
Division of Waste Management
Kentucky Department for Environmental Protection
14 Reilly Road
Frankfort Office Park
Frankfort, Kentucky 40601

Mr. David G. Williams
U.S. Environmental Protection Agency
Region 4
DOE Remedial Section
Federal Facilities Branch
Waste Management Division
61 Forsyth Street
Atlanta, Georgia 30303

Dear Mr. Scott and Mr. Williams:

TRANSMITTAL OF THE *REMOVAL NOTIFICATION FOR THE SOILS OPERABLE UNIT INACTIVE FACILITIES AT THE PADUCAH GASEOUS DIFFUSION PLANT, PADUCAH, KENTUCKY* (DOE/LX/07-0014&D1)

Enclosed is the certified D1 version of the *Removal Notification for the Soils Operable Unit Inactive Facilities at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* (DOE/LX/07-0014&D1).

In accordance with the Federal Facility Agreement, the Kentucky Department for Environmental Protection and the U.S. Environmental Protection Agency have a 30-day review period to provide comments and/or approve the document.

If you need any additional information, please contact Dave Dollins at (270) 441-6819.

Sincerely,

Reinhard Knerr, Paducah Site Lead
Portsmouth/Paducah Project Office

Enclosures:
1. Removal Notification D1
2. Certification Page

cc w/enclosures:
DCC/Kevil

cc w/o enclosures:
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R. Blumenfeld, PPPO/Lexington
T. Brindley, PRS/Kevil
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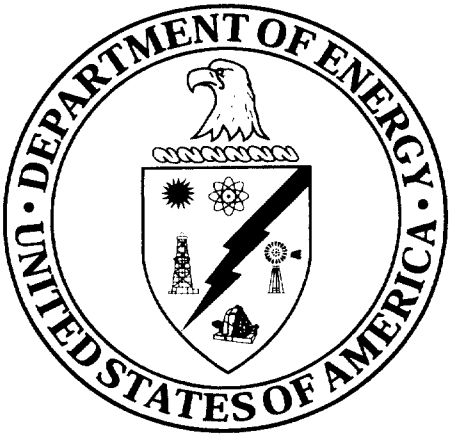
DOE/LX/07-0014&D1
Primary Document

Removal Notification for the Soils Operable Unit Inactive Facilities at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky



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CERTIFICATION

Document Identification: **Removal Notification for the Soils Operable Unit Inactive Facilities at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky (DOE/LX/07-0014&D1)**

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Paducah Remediation Services, LLC
Co-Operator

S. Nick Stanisich
Interim Site Manager

2/26/07
Date Signed

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

U.S. Department of Energy (DOE)
Owner and Operator

William E. Murphie, Manager

2/27/07
Date Signed

DOE/LX/07-0014&D1
Primary Document

Removal Notification for the Soils Operable Unit Inactive Facilities at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky

Date Issued—February 2007

Prepared for the
U.S. DEPARTMENT OF ENERGY
Office of Environmental Management

Prepared by
PADUCAH REMEDIATION SERVICES, LLC
managing the
Environmental Remediation Activities at the
Paducah Gaseous Diffusion Plant
under contract DE-AC30-06EW05001

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ACRONYMS

CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CFR	*Code of Federal Regulations*
COC	contaminant of concern
DOE	U.S. Department of Energy
EE/CA	Engineering Evaluation/Cost Analysis
FFA	Federal Facility Agreement
HF	hydrogen fluoride
NTC	non-time-critical
OU	operable unit
PCB	polychlorinated biphenyl
PGDP	Paducah Gaseous Diffusion Plant
RCRA	Resource Conservation and Recovery Act of 1976
SE	site evaluation
SI	site investigation
SWMU	solid waste management unit
TCE	trichloroethene
WAG	waste area group

Removal Notification for the Soils Operable Unit Inactive Facilities at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky

In accordance with Section X (B) of the Federal Facility Agreement (FFA), the U.S. Department of Energy (DOE) is hereby providing a written Non-Time-Critical (NTC) Removal Notification that includes a summary of the Administrative Record, constituting an equivalent removal site evaluation. This removal notification is being issued to facilitate the long-term remediation of the Soils Operable Unit (OU) at the Paducah Gaseous Diffusion Plant (PGDP) through the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process and to protect the industrial worker. The removal action includes a period of planning greater than six months; therefore, the action will be considered an NTC removal action.

A removal action for the three inactive facilities is warranted due to the contaminants of concern (COCs) identified, their associated concentration levels, and relevant process knowledge. Analyses indicate that the COCs found at these facilities pose a direct contact risk to human health and have the potential to migrate through surface water and/or groundwater, thereby posing a threat to public health or welfare or the environment.

The proposed removal action will evaluate removal action alternatives for the following three PGDP inactive facilities:

- C-218 Outdoor Firing Range [Solid Waste Management Unit (SWMU) 181];
- C-403 Neutralization Tank (SWMU 40); and
- C-410-B HF Neutralization Lagoon (SWMU 19).

The locations of the three facilities requested for removal are shown in Figure 1. Each of these facilities is described below.

The C-218 Firing Range (SWMU 181) is an inactive facility formerly used as an outdoor firing range that was operational from 1985 to 1992. The facility is located immediately west of the PGDP on DOE property and is a u-shaped soil berm approximately 4.88 m (16 ft) high. Based upon historical knowledge, suspected contaminants include lead and other heavy metals. A sampling of the berm was performed in 1993 (MMES 1994). The surface soil was sampled for radiological constituents, polychlorinated biphenyls (PCBs), and Resource Conservation and Recovery Act (RCRA) bulk metals. Ten sampling locations were chosen at random, and two were sampled for RCRA metals, including lead. The lead results from the two sampled locations [WC-1042 (duplicates) and WC-1043] are presented in Figure 2 and indicate lead present at concentrations above the background concentration (36 mg/kg) and risk-based action level for the hypothetical industrial worker exposure scenario (1,250 mg/kg) (DOE 2001). Other RCRA metals were detected in these two sample locations, but were not above risk-based action levels. All ten locations were sampled for radionuclides and PCBs. Of the ten locations, four (WC-1042, WC-1046, WC-1047, and WC-1049) had total uranium above analytical detectable limits for uranium (ranging from 1.6-1.8 pCi/g), but were below the background concentration for total uranium (3.8 pCi/g) and risk-based action level for the industrial worker (171 pCi/g; uranium-238) (DOE 2001). The remaining six locations (WC-1043, WC-1044, WC-1045, WC-1048, WC-1050, and WC-1051) had total uranium below detectable limits for uranium (less than 1.5 pCi/g). As a result of the lead concentrations, a removal action to address lead-contaminated areas in the berm is warranted. Additional

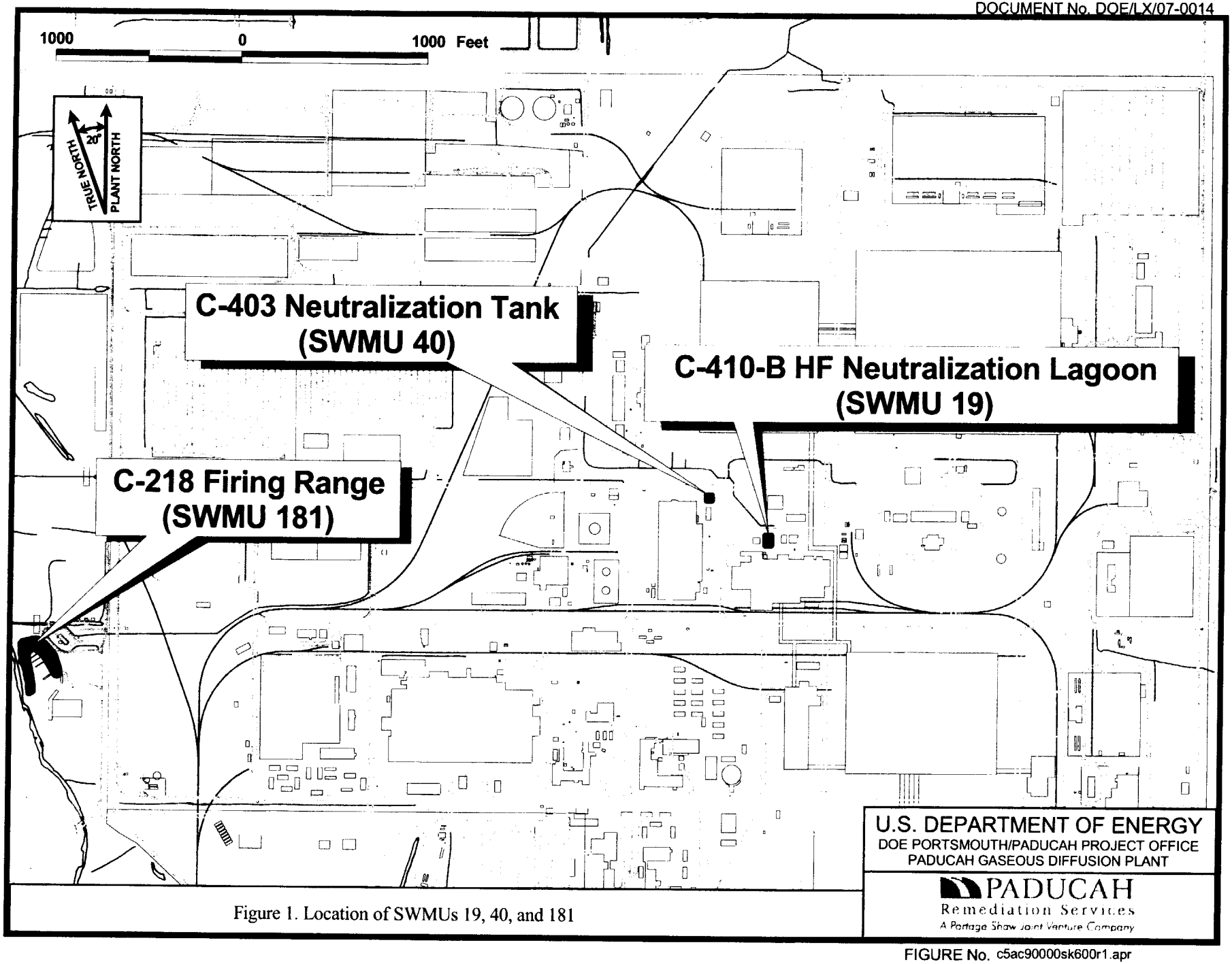

Figure 1. Location of SWMUs 19, 40, and 181

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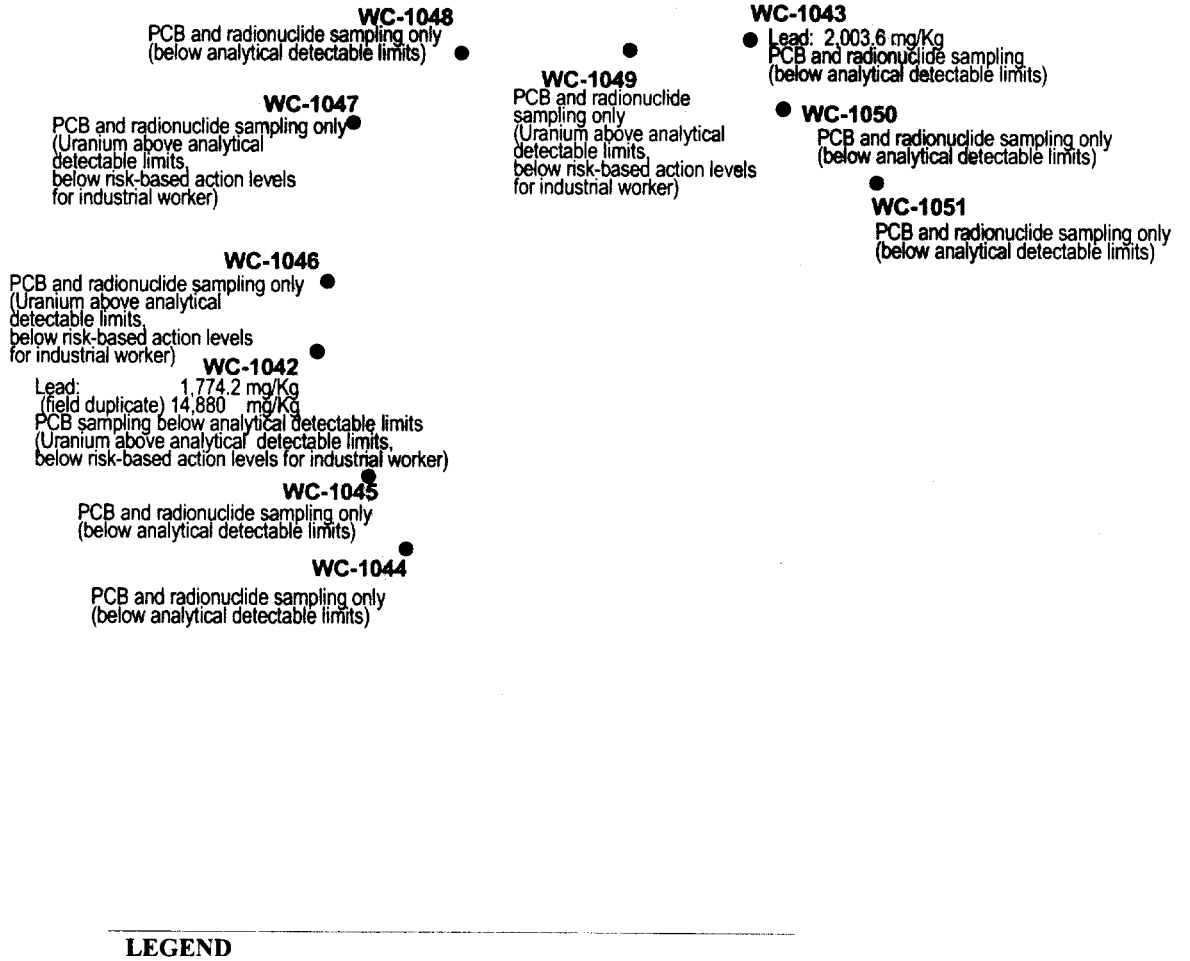

U.S. DEPARTMENT OF ENERGY
DOE PORTSMOUTH/PADUCAH PROJECT OFFICE
PADUCAH GASEOUS DIFFUSION PLANT

Figure 2. Soil Sampling at SWMU 181

PADUCAH
Remediation Services
A Portage Shaw Joint Venture Company

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sampling during the removal action will be used to further determine the nature and extent of contamination and select the appropriate response action.

The C-403 Neutralization Tank (SWMU 40) is located at the northeast corner of the C-400 Building. The tank is 7.62 m (25 ft) square by 7.92 m (26 ft) deep, in-ground, and open-topped. It is constructed of concrete and lined with two layers of acid brick. The tank was used for the storage and treatment of acidic, uranium-bearing waste solutions generated during cleaning operations in the C-400 Building until 1957. By 1957, neutralization equipment was installed in the C-400 Building. Although neutralization no longer was carried out at C-403 after 1957, low-level, uranium-bearing wastewater continued to be discharged to C-403 until 1990. These discharges included uranium hexafluoride cylinder hydrostatic-test water, overflow and runoff from cleaning tanks, discharge from floor drains, and other unknown sources. After 1990, the C-403 Neutralization Tank was removed from service. In 1993, nine water and three sediment samples were collected from the C-403 Neutralization Tank. Trichloroethene (TCE) concentrations in the nine water samples ranged from 17 to 1,300 µg/L. TCE concentrations in the three sediment samples ranged from 35 to 6,700 µg/kg (DOE 1999a). During the Waste Area Group (WAG) 6 Remedial Investigation, a water line located near the C-403 tank broke, and subsurface water flowed into the tank from one of the still existing fill lines. Approximately 198 m^3 (7,000 ft^3) of water accumulated in the tank. Samples of the water from the tank were analyzed in November 1997 and were found to contain TCE at concentrations up to 21 mg/L, which exceed the risk-based action level for the hypothetical industrial worker exposure scenario (1.54 mg/L TCE) (DOE 2001). Resampling in January 1998 found TCE concentrations in water up to 5.6 mg/L, which exceed the risk-based action levels for the hypothetical industrial worker exposure scenario (DOE 1999a). This removal action will address approximately 283,906 liters (75,000 gallons) of water and 1,048 m^3 (36,981 ft^3) of soil, sediment, concrete, and brick associated with the C-403 Neutralization Tank and surrounding soil. Sampling before the removal action will be used to further determine the nature and extent of contamination and select the appropriate response action.

The C-410-B HF Neutralization Lagoon (SWMU 19) is located north of the C-410 Feed Plant. It is a rectangular, below grade impoundment with dimensions of 11.59 m x 15.55 m x 2.13 m (38 ft x 51 ft x 7 ft) [383.88 m^3 (1938 ft^3)]; has an earth-clay floor; and has sloped sides reinforced with wire and grout. It received effluent from the C-410-C Neutralization Building, where lime was used for the neutralization of hydrogen fluoride (HF) cell electrolyte from lead-acid batteries. In addition, trucks transporting fly ash to the C-746-T inert landfill were rinsed in this impoundment. All processes in the C-410 Building ceased in the late 1970s. The C-410-B HF Neutralization Lagoon was investigated as part of the Administrative Consent Order Phase II Site Investigation (SI) in 1991, and sediment and soil samples were collected from the lagoon (CH2M HILL 1992). Analytical results indicated in soil samples from a single soil boring. TCE was detected in soil samples from the upper 4.57 m (15 ft) of the boring. In addition, technetium-99, uranium-235, uranium-234, uranium-238, barium, and nickel were present at levels above their analytical detection limits. Sediment samples contained technetium-99, uranium-235, uranium-234, and uranium-238 at concentration levels above their analytical detection limits. The sediment sample also contained detectable concentrations of arsenic, chromium, mercury, selenium, barium, lead, nickel, and silver. Sludge samples taken from the C-410-B Lagoon in July 1991 for waste characterization also indicated total uranium and technetium-99 at levels above their analytical detection limits. C-410-B was investigated during the WAGs 9 and 11 Site Evaluation (SE). The SE found detected concentrations of technetium-99, uranium-234, uranium-235, and uranium-238 that were about 10 times their background concentration (DOE 1999b). The SE and Phase II SI did not find COCs within the C-410-B HF Neutralization Lagoon that exceeded risk-based action levels for the hypothetical industrial worker exposure scenario; however, the facility was roped off in accordance with 10 *CFR* 835 to prevent radiological contamination to the industrial worker. Given the concentration of radionuclides that required posting, DOE proposes taking an action to prevent the spread of radionuclides and protect the long-term safety of the industrial worker. This action will address approximately 241 m^3 (8,512 ft^3) of

sludge, concrete, and soil and approximately 94,635 liters (25,000 gallons) of water. Sampling before the removal action will be used to further determine the nature and extent of contamination and select the appropriate response action.

A removal action is appropriate for the C-218, C-403, and C-410-B facilities, given the contaminant concentrations and the factors listed in 40 *CFR* § 300.415 (b)(2). These factors include the following:

- Actual or potential exposure to nearby populations, such as plant workers, animals, or the food chain from hazardous substances, pollutants, or contaminants (C-403 and C-410-B);

- High levels of hazardous substances, pollutants, or contaminants in soils, largely at or near the surface, that may migrate (C-218 and C-403); and

- Weather conditions (e.g., flooding that may affect surface water run-off) that may cause hazardous substances, pollutants, or contaminants to migrate or be released (C-410-B).

See 40 *CFR* § 300.415(b)(2)(i), (iv), (v) [factors described in 40 *CFR* 300.415 (b)(2)(ii), (iii), (v), (vii), (viii) are either inapplicable or not present]. DOE proposes to proceed with the process for implementing an NTC removal action. An Engineering Evaluation/Cost Analysis (EE/CA) will be prepared and will incorporate the appropriate response actions that are consistent with the final actions for the PGDP and will contribute to the efficient performance of long-term remediation of PGDP. The proposed date for submittal of the D1 EE/CA to the Environmental Protection Agency and the Commonwealth of Kentucky is June 13, 2007*.

*Note that this is a general planning schedule with a target date for submittal of the key CERCLA decision document. Any extensions for reviewing documents, submitting comments, or responding to comments will impact the schedule. This schedule is included in this document for information purposes only and is not intended to establish enforceable schedules or milestones. Enforceable milestones for this project are contained in Appendix C of the Paducah FFA and Appendix 5 of the Site Management Plan. Any modifications to enforceable milestones in the FFA or Site Management Plan will be updated in accordance with Sections XXIX and/or XXXIX of the FFA.

REFERENCES

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DOE 1999b. *WAGs 9 and 11 Site Evaluation Report at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky,* DOE/OR/07-1785&D2, U.S. Department of Energy, Paducah, KY, January.

DOE 2001. *Methods for Conducting Risk Assessments and Risk Evaluations at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky, Volume 1. Human Health, and Volume 2. Ecological,.* DOE/OR/07-1506/V1&D2, U.S. Department of Energy, Paducah, KY, December.

MMES (Martin Marietta Energy Systems) 1994. *Solid Waste Management Unit/Area of Concern Self Assessment Evaluation for Decision Process Report No. 065, Paducah Gaseous Diffusion Plant, Paducah, Kentucky,* DPR-065, Science Applications International Corporation, Paducah, KY, October.